

August 24, 2004

MEMORANDUM TO: Daniel M. Gillen, Deputy Director
Decommissioning Directorate
Division of Waste Management
and Environmental Protection
Office of Nuclear Material Safety
and Safeguards

FROM: Ted Smith, Project Manager **/RA/**
Reactor Decommissioning Section
Division of Waste Management
and Environmental Protection
Office of Nuclear Material Safety
and Safeguards

SUBJECT: MEETING WITH CONNECTICUT YANKEE ATOMIC POWER
COMPANY TO UPDATE DECOMMISSIONING AND LICENSE
TERMINATION PLAN STATUS

A meeting was held on August 17, 2004 in Rockville, MD to review the status of decommissioning activities ongoing at the Haddam Neck Plant. The meeting report is enclosed.

NRC Docket No.: 50-213
NRC License No.: DPR-61

Enclosure: As stated

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OFFICE	DCD		DCD		DCD	
NAME	TSmith*		DSchmidt*		CCraig*	
DATE	08/20/04		08/24/04		08/24/04	

OFFICIAL RECORD COPY

MEETING REPORT

DATE: August 17, 2004

TIME: 10:00 - 11:30 am

PLACE: Two White Flint North
11555 Rockville Pike
Rockville, Maryland 20852

PURPOSE: Status of Connecticut Yankee Decommissioning activities and License Termination Plan (LTP)

ATTENDEES: Refer to Attachment A

BACKGROUND:

The licensee, the Connecticut Yankee Atomic Power Company (CYAPCO), requested a meeting to present current status on decommissioning of the Haddam Neck Plant and their LTP.

DISCUSSION:

CYAPCO presented information on Haddam Neck in the following areas: Decommissioning update, groundwater monitoring results update, building characterization results, status of the biennial LTP update, and the LTP amendment approach and schedule.

Decommissioning Update

CYAPCO has completed the final status survey of 400 acres of class 2 and 3 areas, and the former landfill area. Fuel loading is approximately 1/3 complete, with final the transfer expected by January 2005. Building demolition of secondary side buildings has commenced, as has removal of the tank farm soil. The tank farm soil should be removed by November 2004 and physical decommissioning completed by the end of 2006.

Groundwater Monitoring

CYAPCO presented a summary of groundwater monitoring for mid 2004, including well data for tritium and strontium. The data shows strongly declining contaminant levels since late 2003. This is principally attributed to a dry fall/winter 2003 and commencement of the tank farm area dewatering in spring 2004, just prior to seasonal rainfall events.

Building Characterization Results

Concrete cores have been taken in four of the five areas of the site where subsurface concrete was being considered for leaving in place post site closure. The final area of the site is below the spent fuel pool, which will be sampled after completion of the spent fuel transfer campaign. The samples were all analyzed for gamma radionuclides and tritium; and selected samples were analyzed for transuranic radionuclides, strontium-90, and other hard-to-detect radionuclides. CY decided to remove much of the concrete, but still plans to leave concrete below 4 foot under grade in the cable vault, the containment liner, the containment in-core sump, and the containment sump suction line piping. Initially, the contamination on the suction line piping was approximately 1 million disintegrations per minute per 100 square centimeters, but was

Enclosure

successfully decontaminated to background levels by using 9 decontamination passes with a 40,000 pounds per square inch hydrolazer.

Biennial LTP Update

CYAPCO discussed changes anticipated in the biennially required update to the LTP, which will include the same changes discussed in a March 9, 2004 meeting with NRC staff. Specifically, chapters 1-3, 5, 7 and 8 will be revised to incorporate the revised decommissioning approach (i.e. building free release and demolition), including consolidation of survey areas; updates to the predicted waste volumes; modifications to final status survey plans to reflect the revised decommissioning approach; an update of the decommissioning cost estimate and an update of the environmental report. None of the identified changes trigger NRC approval requirements under the LTP provisions or exceed 10 CFR 50.59 criteria.

LTP Amendment

CYAPCO indicated they will submit a license amendment to the NRC to incorporate a new dose-modeling approach for subsurface concrete to be left buried onsite after decommissioning. The approach will use a Brookhaven developed concrete diffusion model, and will include a method to calculate future groundwater dose based on concrete characterization data. The proposed amendment is anticipated in late September 2004.

ACTIONS:

CY indicated they will submit the LTP biennial update by the end of August 2004, and the LTP amendment request by the end of September 2004.

ATTACHMENTS:

- A. Attendees list, as stated above
- B. CYAPCO slides on meeting topics

Meeting Attendees

Date: 8/17/2004

Topic: CY- Haddam Neck License Termination Plan Update

NAME	AFFILIATION	PHONE NUMBER
Duane Schmidt	NMSS/DWMEP/DCD	301-415-6919
Dave Lewis	Shaw Pittman	202-663-8474
Phillip Newkirk	US EPA	202-343-9377
Claudia Craig	NRC/NMSS	301-415-7276
Chris McKenney	NRC/NMSS/DWMEP/EPAD	301-415-6663
Ravi Joshi	CYAPCO-Licensing	860-267-3578
Rich McGrath	CYAPCO-Site Closure Tech Support Manager	860-267-3573
Gerry van Noordennen	CYAPCO-Regulatory Affairs Manager	860-267-3938
Eric Darois	CYAPCO	603-778-2871, x29
Mark Thaggard	NMSS/DWMEP/DCD	301-415-6971
Ted Smith	NMSS/DWMEP/DCD/RDS	301-415-6721
Marvin Rosenstein	EPA	via bridgeline
Mike Firsick	Connecticut-DEP	via bridgeline

ATTACHMENT A

Decommissioning, and LTP Update

Meeting with USNRC

August 17, 2004

Discussion Topics

- Decommissioning Update
- Groundwater Monitoring Results Update
- Building Characterization Results
- Status of Biennial LTP Update
- LTP Amendment Approach
 - Conceptual Model
 - Dose Calculation Methodology
 - Implementation
- Summary and Schedule

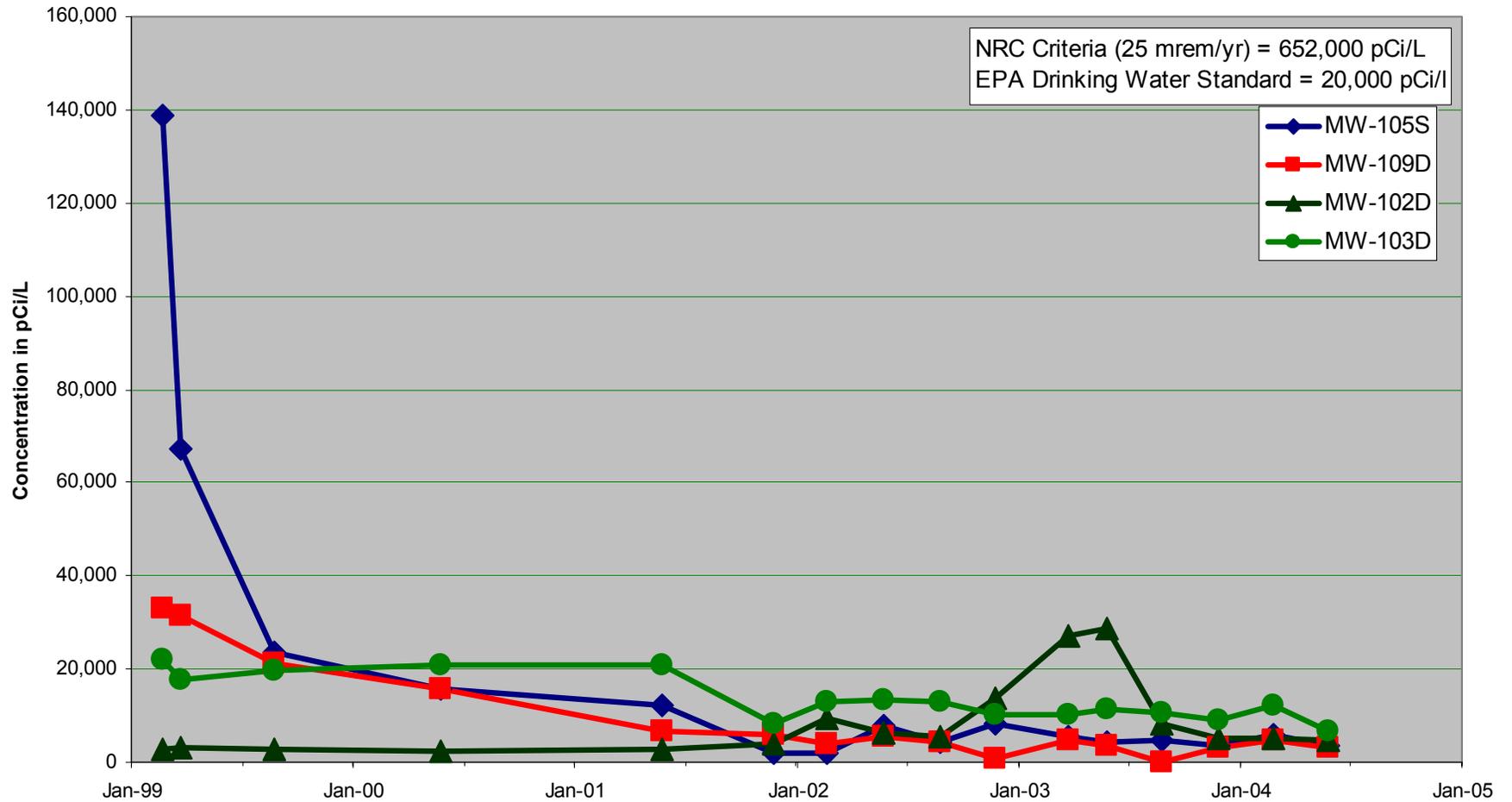
Decommissioning Update

- FSS of 400 Acres - Class 2 and 3 Areas Complete
- ORISE Inspection of 400 Acres Complete
- FSS of Landfill Area – Class 1 & 2 Areas Complete
- 13 of 43 Canisters Located at the ISFSI 8/12
- Secondary Side Building Removal Begun
- Complete Tank Farm Soil Removal 11/04
- Start RCA Building Removals 8/04
- Complete Fuel Transfer 1/05
- Complete Physical Decommissioning 12/06
- Release Non-ISFSI Areas From License Mid-2007

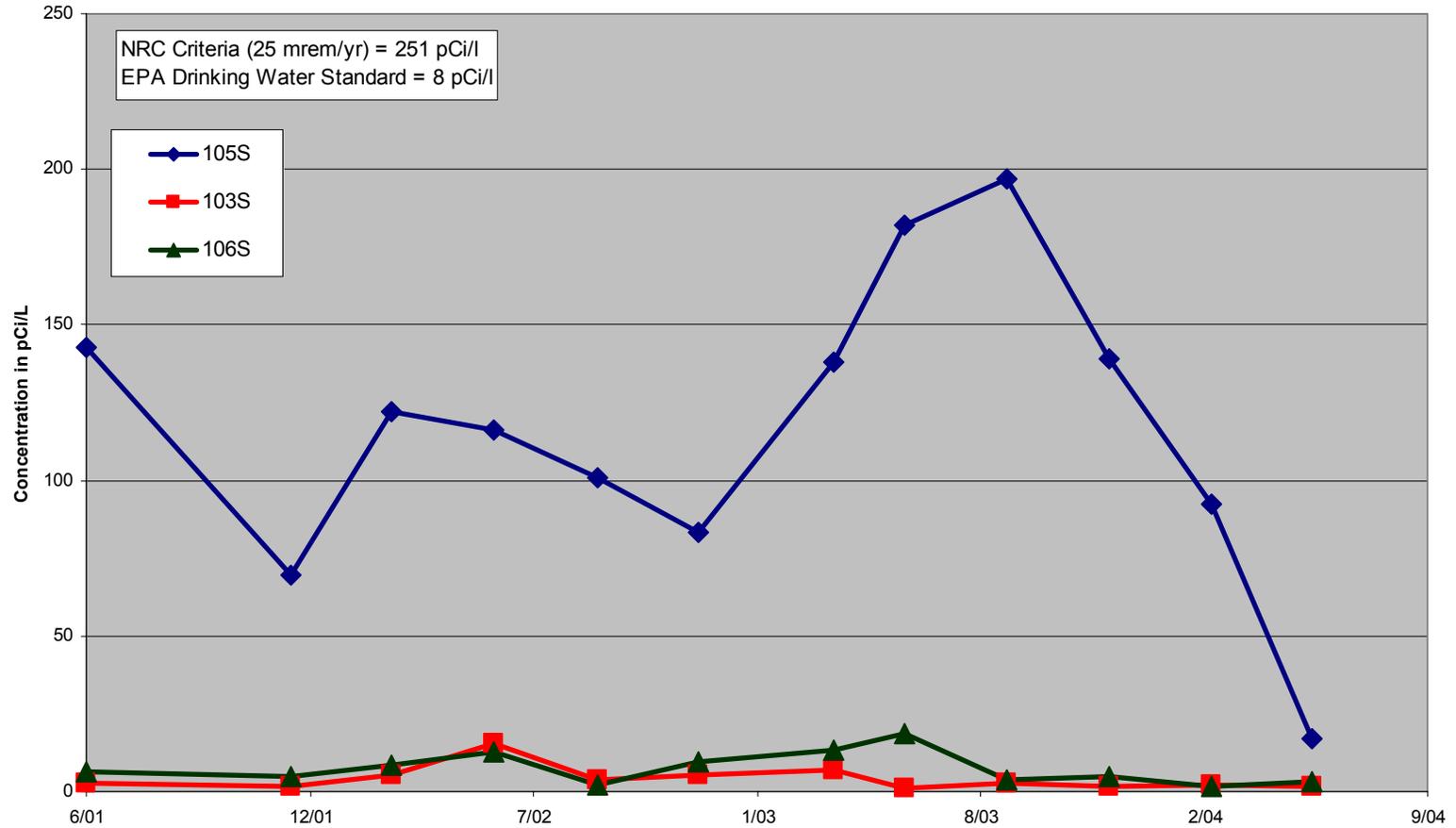
Biennial LTP Update

- 10 CFR 50.71(e) requires an update of the LTP at least every 24 months
- LTP Update Issuance expected by the End of August
- Changes are the same as discussed on 3/9/04
- No changes have triggered Prior NRC Approval due to the LTP License Conditions or 10CFR 50.59 Criteria

Tritium Trend

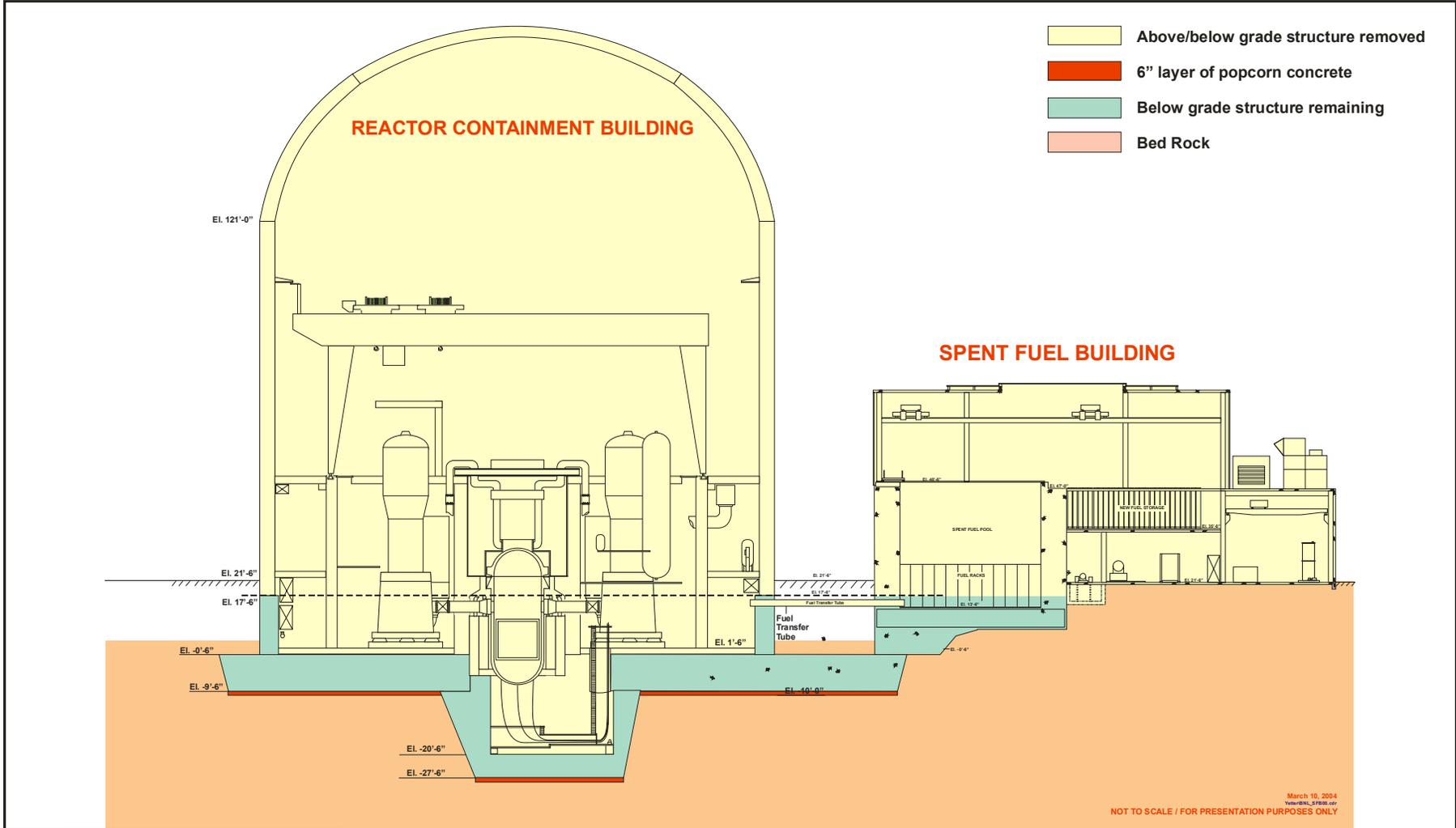


Strontium-90 Trend



GW Source Identification





CONNECTICUT YANKEE ATOMIC POWER COMPANY
GENERAL ARRANGEMENT DRAWING

POTENTIALLY CONTAMINATED BELOW GROUND CONCRETE



Building/Pipe Characterization

- Concrete Cores Taken In:
 - RHR Pit
 - Cable Vault
 - Containment Walls and Mat (Also Bedrock Cores)
 - In-Core Sump
- Analyzed for:
 - Gamma Radionuclides
 - Tritium
 - Selected Samples analyzed for
 - Transuranic Radionuclides
 - Sr-90
 - Other Hard to Detect Radionuclides
- Containment Sump RHR Suction Line Survey

Building Characterization Results

- RHR Pit of the Primary Auxiliary Building
 - Significant Interior Surface Contamination
 - H-3 Volumetric Contamination of Pit Wall near to Former RWST Area below 25 mrem/yr DCGLs
 - Decision: Remove Entirely
- Cable Vault
 - Low Internal Surface Contamination
 - H-3 & Sr-90 Volumetric Contamination of Walls and Floors below 25 mrem/yr DCGLs
 - Decision: Remove to 4 foot Below Grade

Building Characterization (Cont.)

- Containment Areas other than In-Core Sump
 - Significant Surface Contamination of Internal Floors
 - Volumetric Contamination of Concrete outside of the Containment Liner below 25 mrem/yr DCGLs:
 - Primarily H-3, Other Radionuclides well below DCGLs
 - Decision: Remove Concrete to Containment Liner
- Containment In-Core Sump
 - One Sample (Area of expected highest activation under Reactor)
 - Estimates of Levels of H-3 in Concrete to Remain Significantly Higher than Current Volumetric DCGL
 - Decision: Difficult Remediation - Use Basement Fill Model

Building Characterization (Cont.)

- Containment Sump RHR Suction Line
 - Initial Contamination Levels Approximately 1 Million dpm/100cm²
 - Pipe Decon conducted using 40,000 psi Hydrolazer
 - 9 Full Passes of Embedded Pipe
 - Post Decon Survey: No Contamination over Background
 - FSS of pipe to be conducted when exterior soil has been removed in October 2004 time frame

LTP Revision 1a Demolition Approach

- Decontaminate Building to Surface and Volumetric DCGLs
- Conduct Final Status Survey with Building Standing
- Buildings Demolished to 3 foot below grade
- Demolition Debris used to backfill the basement

Dose Modeling and Final Status Surveys

- Land Areas

- Three Dose Pathways Included

- Soil

- Existing Groundwater

- Areas Impacted by Aquifer Plume

- Buildings

- Groundwater from Buried Debris



Resident Farmer

$$25mr / yr \geq D_{Total} = D_{Soil} + D_{ExistingGW} + D_{GWfromDebris}$$

Revised Demolition Approach

- **Containment Basement:**
 - Remove Internal Concrete to the Containment Liner
 - Perform Final Status Survey of Surfaces and Volumetric Contamination to Building Occupancy DCGLs Except for Inaccessible Areas;
 - Piping to be grouted
 - In-core Sump rendered inaccessible with “Flowable Fill”
 - Calculate “Future Groundwater” Dose with “Basement Fill Model”
 - Backfill Basement w/Clean Fill to Approximately 3 ft below grade (includes a protective membrane covered with 1 foot of fill)
 - Dispose of Building above 4 ft below grade, membrane and sacrificial fill above membrane as Rad Material
 - Survey Surface of fill remaining at 4 ft below grade
 - Backfill to grade with clean fill and conduct Surface and Subsurface Final Status Surveys after Isolation and Controls established

Revised Demolition Approach (Cont.)

- **Fuel Building Spent Fuel Pit:** Same Approach as Containment except that liner is to be removed
- **Other RCA Building Basements to Remain** (such as B Switchgear & Cable Vault with very low contamination history)
 - Characterization Results indicate that Decontamination of Basement may not be required
 - Membrane and Sacrificial fill layer may not be required due to low contamination history of structure above 4 foot below grade
 - Otherwise approach is same as Fuel Building

Basement Fill Model

- Calculates Dose from “Future Groundwater”
- Determines Total Activity Inventory Available for Release to Groundwater from:
 - Liner and Embedded Piping Inside Surfaces
 - Radioactivity Released from Volumetric Contamination Controlled by Diffusion Rate thru Basement Walls and Flowable Fill (Based on Brookhaven Lab Diffusion Study) for:
 - Containment Walls and Floor Mat
 - In-Core Sump (Includes Flowable Fill)
 - Spent Fuel Pit

Basement Fill Model (Cont.)

- Equilibrium Calculated between Backfill Soil and Groundwater for each Basement
- Assumptions of Basement Fill Model:
 - Backfill Material K_d to be determined by Testing of Actual Backfill Soil Samples at Brookhaven Lab
 - No Recontamination of Liner Walls
 - No Credit for Containment Liner

Basement Fill Model (Cont.)

- Resulting Groundwater Concentration will be compared to the Groundwater DCGL in HNP LTP Revision 1a to determine dose from “Future Groundwater”
- For Land Areas which include a Building Basement, Sum of Doses to Show compliance Includes:
 - Soil Dose (per HNP LTP Revision 1a)
 - Existing Groundwater Dose (per HNP LTP Revision 1a)
 - “Future Groundwater” Dose calculated by “Basement Fill Model” (Per Proposed License Amendment)

Chapters Effected By LTP Amendment

- Chapter 2 – Summary of Concrete Characterization Results
- Chapter 5
 - Core Samples Required for “Future GW” dose calculation: (See Table at right)
 - Additional Buried Pipe Release Values for Additional Pipe Sizes

Building	Charact. Samples	FSS Samples
Containment Walls	4	6
Containment Mat	8	6
In-Core Sump	1 Taken 4 Planned	4
Spent Fuel Pool	6 Planned	6
Cable Vault	7	6

Chapters Effected by LTP Amendment (Cont.)

- Chapter 6
 - Details of Basement Fill Model
 - Method of Calculation of Dose - Basement Fill Model
 - Summary of Brookhaven Concrete Diffusion Study
 - Summary of Brookhaven Backfill Soil Kd Study

Summary and Schedule

- Submittal of Amendment in September
- Will Include
 - Method to be used to Calculate Future Groundwater
 - Estimate of Future Groundwater Dose based on Characterization Results to Date
- Approval Needed by May 2005 to support Demolition Schedule
- Questions/Discussion